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A Girgensohn, J Boreczky - ... Conference on Multimedia Computing and Systems, ..., 1999 - [ieeexplore.ieee.org](#)  
... more different from each other than **video** images ... of confidence scores to represent detected **features** and the ... of a slide as a grayscale plot along the **time line**. ...

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N Vasconcelos - IEEE Intl. Conf. on Image Processing, 1998 - [eprints.kfupm.edu.sa](#)  
... in the high-lighted area of the **time-line** in the ... quickly access the relevant portions of the **video** stream ... Semantic- based access is an important **feature** on its ...

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**[\[PDF\] ▶The Físchlár digital video recording, analysis, and browsing system](#)**

H Lee, A Smeaton, C O'Toole, N Murphy, S ... - RIAO 2000: Content-Based Multimedia Information , 2000 - Citeseer

... for analysis. In a sense, our **video** analysis and browsing **features** using a **timeline** bar and sets of representative frames provides ...

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FC Li, A Gupta, E Sanocki, L He, Y Rui - Proceedings of the SIGCHI conference on Human ..., 2000 - [portal.acm.org](#)

... that users might use the notes **feature** to bookmark ... record their thoughts regarding the content of the **video**. ... the shot boundary frames and the **timeline** markers. ...

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J Casares, AC Long, BA Myers, R Bhatnagar, ... - Proceedings of the 4th conference on Designing ..., 2002 - [portal.acm.org](#)

... The **timeline** also shows varying amounts of information depending ... This **feature** brings up a number of interesting ... First, the selection in **video** may begin and end ...

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A Girgensohn, J Boreczky, L Wilcox, J Foote - Human-computer Interaction, INTERACT'99: IFIP TC , 1999 - [books.google.com](#)

... We are also adding a zoom **feature** that expands a small segment of the **video** to fill the entire **time-line**. to facilitate fine positioning. ...

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S Uchihashi, J Foote, A Girgensohn, J ... - Proceedings of the seventh ACM international ..., 1999 - [portal.acm.org](#)

... the frame and the corresponding segment in the **timeline**. ... system we have implemented a **feature** to show ... The interaction technique for exploring **video** segments in ...

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**Chaining: A generalized batching technique for video-on-demand systems**

S Sheu, KA Hua, W Tavanapong - Proceedings of IEEE International Conference on ..., 1997 - doi.ieeecomputersociety.org

... 2. The Chaining technique and new **features** are presented ... allows more clients to share the same **video** stream ... this algorithm: (1) The first **time line** shows that ...

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**Video classification using transform coefficients- ► [unifr.ch](#) [PDF]**

A Girgensohn, J Foote - 1999 IEEE International Conference on Acoustics, ..., 1999 - [ieeexplore.ieee.org](#)

... region by dragging across the **timeline**. A model could be rapidly trained on the **features** for this region, and the similarity of a large **video** corpus could be ...

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**Keyframe-based user interfaces for digital video**

A Girgensohn, J Boreczky, L Wilcox - Computer, 2001 - doi.ieeecomputersociety.org

... The **timeline** shows the duration of the segment that ... It is unlikely that informal **video** material such as captured ... with more formal material such as **feature** films ...

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J Graham, JJ Hull, RI Inc, CA Menlo Park - Multimedia and Expo, 2003. ICME'03. Proceedings. ..., 2003 - [ieeexplore.ieee.org](http://ieeexplore.ieee.org)

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DS Leone, DA Dever, DP Gluchowski, SE ... - US Patent App. 10/628,821, 2003 - Google Patents

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R Mitchell - Technology of Object-Oriented Languages and Systems: ..., 1999 - Institute of Electrical & Electronics Engineers (IEEE)

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DL Hecht - Computer, 2001 - [ieeexplore.ieee.org](http://ieeexplore.ieee.org)

... print-ers as well as security **features** like copy ... can access spe- cific parts of the **video** with the ... An annotated **timeline** is also available to position the ...

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[\[PDF\]](#) ► [The Kontakte multimedia project at the University of Iowa](#)

JP Pusack - Calico Journal, 1999 - [calico.org](http://calico.org)

... the financial impact, the need to fix bugs, add **features**, and thoroughly ... about the criteria for selec- tion of the **video** materials ... But what about the **timeline**? ...

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## [B ook R eviews](#)

GM Homsey, H Aref, KS Breuer, S Hochgreb, ... - AIAA Journal, 2001 - [pdf.aiaa.org](http://pdf.aiaa.org)

... and ow vi- sualization, pathlines, streaklines, **timelines**, streamlines and ... still photos or sketches to **video** clips, and to interac- tive **features** such as ...

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... PACKING KEYFRAMES A typical keyframe **extraction** algorithm is ... and the corresponding segment in the **timeline**. ... Meetings Using Audio and **Video Features**," in Proc ...

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**A semi-automatic approach to home video editing-** ► [fxpal.com](#) [PDF]

A Girgensohn, J Boreczky, P Chiu, J Doherty, ... - Proceedings of the 13th annual ACM symposium on ..., 2000 - portal.acm.org

... editing, **video** analysis, **video** exploration, automatic **video** clip **extraction**. ... independently of the set of **features** used. ... keyframe to play that **video** clip (see ...

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**System for and method of capture, analysis, management, and access of disparate types and**

... R Buinevicius, K Pendyala... - US Patent App. 09/995,292, 2001 - Google Patents

... 130 can be configured to perform multi-modal **feature extraction**. ... These **features** can be used for screening, flagging, and ... 330, a database 340, a **video** server 350 ...

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### ↑ ABSTRACT

This paper presents methods for automatically creating pictorial video summaries that resemble comic books. The relative importance of video segments is computed from their length and novelty. Image and audio analysis is used to automatically detect and emphasize meaningful events. Based on this importance measure, we choose relevant keyframes. Selected keyframes are sized by importance, and then efficiently packed into a pictorial summary. We present a quantitative measure of how well a summary captures the salient events in a video, and show how it can be used to improve our summaries. The result is a compact and visually pleasing summary that captures semantically important events, and is suitable for printing or Web access. Such a summary can be further enhanced by including text captions derived from OCR or other methods. We describe how the automatically generated summaries are used to simplify access to a large collection of videos.

### ↑ REFERENCES

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► [kfupm.edu.sa](#) [PDF]

P Aigrain, HJ Zhang, D Petkovic - Multimedia tools and applications, 1996 - Springer

... are associated with efficient **feature extraction** mechanisms and (dis ... the user interface and the **feature** storage strategy ... like in stock photo/**video**, art, retail ...

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### Pivot vector space approach for audio-video mixing- ► [gooddocument.com](#) [PDF]

P Mulhem, MS Kankanhalli, J Yi, H Hassan - IEEE Multimedia, 2003 - ieeexplore.ieee.org

... The **links** between music and moving images are ... efficiency among the competing **extraction** methods. ... **Video Feature** Extractable/Used Audio **Feature** Extractable/Used ...

Cited by 13 - Related articles - BL Direct - All 11 versions

### Video cataloger system with synchronized encoders

R Jain, C Fuller, MM Gorkani, B Horowitz, ... - US Patent App. 09/134,497, 1998 - Google Patents

... 5 is an exemplary **timeline** of encoder start-up and ... 12 is a flowchart of the **video** encoding (and ... 14 is a flowchart of the **feature extraction** process shown in FIG ...

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### An annotation engine for supporting video database population- ► [bu.edu](#) [PDF]

M Carrer, L Ligresti, G Ahanger, TDC Little - Multimedia Tools and Applications, 1997 - Springer

... image texture in the annotation and **feature extraction** process. ... We include the concept of **timeline** so that ... object can belong to audio, **video**, graphics types or ...

Cited by 44 - Related articles - BL Direct - All 8 versions

### Extracting story units from long programs for video browsing and navigation

M Yeung, BL Yeo, B Liu - Proceedings of MULTIMEDIA, 1996 - doi.ieeecomputersociety.org

... the subsequent analysis contributes, to the **extraction** of scenes ... allows some forms of analysis of **video** through the ... One important **feature** in a graph is a cut ...

Cited by 189 - Related articles - All 7 versions

### [PDF] ► Multimedia search and retrieval

SF Chang, Q Huang, T Huang, A Puri, B ... - Multimedia Systems, Standards, and Networks, 2000 - ctr.columbia.edu

... The **time line** has two layers of categorization. ... The above **video** object search system achieves fully automatic object segmentation and **feature extraction** at a ...

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### Multi-modal Feature-map: An Approach to Represent Digital Video Sequences

U Srinivasan, C Lindley - Lecture notes in computer science, 1999 - Springer

... model to evolve, as more **feature- extraction** research results ... and visual information available in **video** sequences. The **feature-maps** provide a form of temporal ...

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### Process and system for identifying a position in video using content-based video timelines

DM Barger, Y Caspi - US Patent App. 10/446,902, 2003 - Google Patents

... These **timelines** are composed of an ordered sequence ... FIRST COMPUTING DEVICE 300 **VIDEO**



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R Jain, C Fuller, MM Gorkani, B Horowitz, ... - US Patent 6,463,444, 2002 - Google Patents  
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Nat. Center of Sci. Res., Grenoble, France;This paper appears in: **Multimedia, IEEE**

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**Abstract**

An audio-mixing artist usually adds the musical accompaniment to video. Employing such and not feasible for a home video presentation. Our automatic audio-video mixing technique produces videos. It uses a pivot vector space mapping method that matches video shots with music aesthetic cinematographic heuristics.

**Index Terms****Indexing****Controlled Indexing**[audio signal processing](#) [cinematography](#) [feature extraction](#) [image matching](#) [video processing](#)**Non-controlled Indexing**[aesthetic cinematographic heuristics](#) [automatic audio-video mixing](#) [home video](#) [sequence matching](#) [perceptual features extraction](#) [pivot vector space mapping](#) [matching](#)**Author Keywords**

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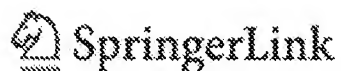
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- 2 J. D. Andrew, *The Major Film Theories—An Introduction*, Oxford Univ. Press, 1976.  
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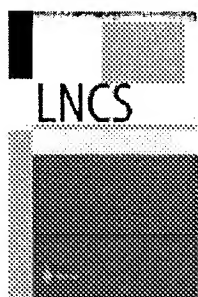
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**Uma Srinivasan<sup>6</sup>** and **1Craig Lindley**

(6) CSIRO Mathematical and Information Sciences, Locked Bag 17, North Ryde, NSW, 1670, Australia, Building E6B, Macquarie University Campus, North Ryde NSW

### Abstract

Video sequences retrieved from a database need to be presented in a compact, meaningful way in order to enable users to understand and visualise the contents presented. In this paper we propose a visual representation that exploits the multi-modal content of video sequences by representing retrieved video sequences with a set of multi-modal feature-maps arranged in a temporal order. The feature-map is a 'collage' represented as a visual icon that shows: the perceptual content such as a key-frame image, the cinematic content such as the type of camera work, some auditory content that represents the type of auditory information present in the sequence, temporal information that shows the duration of the sequence and its offset within the video.

The authors wish to acknowledge that this work was carried out within the Cooperative Research Centre for Advanced Computational Systems established under the Australian Government's Cooperative Research Centres Program.